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ABSTRACT

A study was undertaken to investigate the degree completion rates and the retention rates of cooperative education (co-op) students in eight colleges in Washington and Oregon. Four were community colleges and four were four-year institutions. The subjects in the study included 400 randomly selected community college co-op students, 400 four-year college co-op students, 2 control groups of 400 students each, a minority sample of 100, and a control sample of 100. A 5-year time frame for the study began with students entering the colleges in 1983. Results indicated that, at the four-year colleges, 85 percent of the co-op students completed their degrees within the 5 years, whereas only 48 percent of the control group students completed their degrees. At the community colleges, 55 percent of the co-op students and 21 percent of the control group students completed their degrees. For the minority sample, there was a 37 percent difference between the co-op and the control group, with 55 percent of the co-op group graduating. Substantial gains in retention of co-op students over retention of students in traditional programs were also documented. (8 references, 2 tables, 3 figures) (CML)

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DOES CO-OP REALLY MAKE A DIFFERENCE?

A LOOK AT GRADUATION AND RETENTION

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DOES CO-OP REALLY MAKE A DIFFERENCE?

A LOOK AT GRADUATION AND RETENTION

Does participation in cooperative education have a positive effect on the academic progress of college students?

A 1985 survey of 258 college presidents indicated that enrollment and retention were cited as the biggest challenges to 65% of college presidents (Somers, 1986). National attrition rates indicate that 40% of all freshmen will never receive a four-year degree. Regional state universities will lose 80-85% of their incoming freshmen to attrition and fewer than half of all freshmen who enroll at a two-year school will return for the second year (Cope, 1978).

Limited past research indicates that participation in cooperative education can improve retention and degree completion rates (Lindenmeyer, 1967; Smith, 1965; Cope, 1978). Somers (1986) focused his research on the cooperative education program at Gordon College in Wenham, Massachusetts. While the sample was necessarily limited in size, the research had very positive implications for the effects of cooperative education on recruitment and retention.

Increasing national attention and concern is also being placed on educational opportunities for minorities. Ramapo College, a four-year public college in New Jersey with a full-time student body of 1827, numbered 173 minority students in

1980. While the actual rate was not given, it was stated that "overall, the four-year student persistence rate at Ramapo hovers somewhat below the national average for colleges of our type and. . . the retention rate for EOP students (equal opportunity program of miniority students) retention rate has been somewhat low" (Sharkey, Bischoff, Echols, Morrison, Northman, Liebman, Steele, 1987, p 69). In contrast, it was observed that persistence rates for all students participating in co-op remained at 92%; thus efforts were made to encourage minority students to participate in cooperative education programs. "When established, this link has been found to create a significant difference in retention of that group" (Sharkey, Bischoff, Echols, Morrison, Northman, Liebman, Steele, p 70).

While cooperative education was not introduced as a tool to improve retention at Gordon College, registrar's records examined over a four-year period showed that 75% of cooperative education students completed their degrees as compared to 65% of non-co-ops (Somers, 1986, p 78). In spite of studies suggesting a strong relationship between co-op and retention, it was still not possible to "say conclusively that co-op causes higher graduation rates for its participants" (Somers, 1986) nor that it is a solution to the continuing dropout problem. It was felt that "other co-op institutions need to undertake similar studies because graduation rates vary from institution to institution, and institutions market themselves differently to prospective students" (Somers, 1986, p 70). These studies needed to be over a broader spectrum of institutions and encompass a larger sample.

While some smaller studies have been undertaken primarily in

the Eastern United States, (Somers, 1986; Bischoff, Echols, Morrison, 1987; and Cope, 1978) the attitudes and economy in the Northwest appears to vary greatly from those of the East. With notable exceptions, the faster pace of life and cosmopolitan lifestyle are reflected in immediacy of response to the saturation of news of current and economic events as compared to the slower more provincial thinking and lifestyle in Washington, Oregon, Idaho and Montana. While there is no evidence to support the fact that these differences influence student retention, there appeared to be a need for data from the Northwest as well as other non-studied regions to support recognition on the part of educators, business, and government that cooperative education can play an integral role in the education of students. It was hoped that, while it was been demonstrated that cooperative education in the Northwest provides the opportunity for applied knowledge (Barnett, 1990), it also presents a plausible solution to the growing attrition problem.

The shift in the workplace towards increasingly complex systems will leave many businesses short of qualified workers and with today's affirmative action policies more and more women and minorities are being sought to fill these postions (Cooper, 1989). Educational programs that significantly impact the academic success rates of students and help to prepare students for the work force of the future will continue to need further study as viable alternatives to traditional academic programs. Strong cooperative education programs can provide applied education that may be attractive to increasing numbers of

students and help to bridge this technology gap.

A Comprehensive Look at Cooperative Education, Graduation and Retention

With these concerns foremost, research was undertaken at Oregon State University attempting to further investigate the degree completion rates as well as the retention rates of cooperative education students in eight colleges in the Northwest. The study included a minority sample which was also studied for the same factors. The resulting statistics for all co-op groups were compared to statistics for control groups of peers not involved in cooperative education but attending the same colleges during the same time frame.

Sample and Methodology

A sample of 1800 students was taken from four four-year institutions and four community colleges. The sample consisted of three State collges and one private liberal arts college as well as four community colleges. Colleges included in the sample were selected from different areas of each state and from urban and rural areas in order to eliminate regional bias. The participating colleges were:

Eastern Washington University	Cheney, Washington
Lane Community College	Eugene, Oregon
Linn-Benton Community College	Albany, Oregon
Oregon State University	Corvallis, Oregon
Pacific Lutheran University	Tacoma, Washington
Portland State University	Portland, Oregon
Seattle Central Community College	Seattle, Washington

Spokanne Community College Spokanne, Washington

Random samples of 400 community college cooperative education students and 400 four-year college co-op students, as well as two control groups of 400 students each, were selected for the study. These sample sizes were sufficiently large to clearly detect differences between the groups for the factors selected to be studied.

An additional minority sample consisting of two groups of 100 each was also collected. Since the minority group studied was only 200, smaller sizes may have resulted in reduced statistical power to show differences.

A five-year time frame beginning with students entering the colleges in 1983, was selected for the study. This was done to allow time for alternating internships in a four-year program and to acccunt for students in community colleges who tend to drop in and out or attend part-time during the course of their programs.

The control group was randomly selected from students entering the degree/certificate programs in 1983 and who did not participate in co-op during the time they were enrolled in that college. The co-op group consisted of a random sample of students entering the program during the same time frame and who went on to participate in cooperative education. In all instances the colleges studied had optional co-op programs. The students were not 'selected' for co-op participation thus academic achievement should not be a factor.

The number of students who went on to complete their programs (graduation rate) as well as the number of terms the students remained in college (retention rate) over a five-year

period was examined for both the co-op and non-co-op students and for a minority sample. It is recognized that the minority sample included only those declared on college records and thus danger exists that some non-identified minorities were excluded. As the other samples dealt with data concerning all students, it should also be pointed out that no attempt was made to exclude minorities from these samples. All data were collected through registration data and transcripts which were searched in the registrar's offices of the involved institutions.

Statistical Tests

Chi-square statistics were computed and used to test the proportion of programs/degrees completed by those students participating in cooperative education as compared to those students not participating in cooperative education. The sample sizes (as outlined above) were large enough to enable detection of differences in the percentages to be shown on the order of 10% when using a 94% confidence level.

T statistics were utilized in working with the sample of 800 students to study the differences in the retention of co-op students as compared to non-co-ops. Data collected compared academic terms completed. The same number of possible terms per academic year were available to all students in the sample . The size of the sample allowed the differences to be observed when they were as low as the two to three months needed to observe the academic term.

The same tests were also used to study effects of cooperative education on the academic retention and degree

completion of minority students. As the minority sample was smaller than the total samlple used (200 as compared to 800 for each test), this smaller size may have resulted in reduced statistical power when detecting the differences in both retention and degree completion.

Outcomes

In all cases, the results indicate that when the number of degrees completed by co-op students at four-year colleges was compared to degrees completed by non-co-ops in the same institutions, there was a significant difference in the number of co-ops completing degrees as compared to the non-co-ops. As the data were collected, it appeared that results would show a marked difference for those students involved in cooperative education at these institutions. The final results showed that eighty-five per cent (85%) of the co-op students completed their degrees as compared to forty-eight percent (48%) for those students who did not become involved in co-op opportunities (Figure 1).

The community college group showed similar results. Fifty-five per cent (55%) of community colleges students who took part in co-op completed their programs in contrast to twenty-one per cent (21%) for non-co-op students (Figure 1).

Statistics for minorities followed the same pattern with approximately a thirty-seven per cent (37%) difference between the two groups. The co-op students again were the prevailing group with fifty-five per cent of their group graduating (Figure 1). It was clear that the overall minority graduation rate was

somewhat lower that of the traditional student graduation rate. Since participation in cooperative education did appear to have a positive impact on the tendency to finish a degree, it has implicaticns as a positive step to shortening the gap in program completion between the student body as a whole and minority students.

Similar results were demonstrated for retention rates for all groups with the co-op students demonstrating a significantly higher retention rate than non-co-ops (Figure 2). Again, the persistence rate was repeated in the minority sample.

In referring to Table 1, it can be seen than the t-test for the combined community colleges had a critical value of 1.96 and a computed difference (t-score) of 10.55. A difference of 10.55 standard errors is vastly less probable than the difference of the 1.96 that was accepted the level and is ten times as great as was necessary to be viewed as significant.

While it is clear that, in each case, the data were sufficient to lead to the rejection of a null hypothesis; what is worthy of comment is by how great a margin the null hypothesis was rejected. Again referring to Table 1, it can be seen that the scores ranged up to 10 standard deviations from the mean which would suggest strongly that the results are worthy of further consideration.

When the Chi-square tests comparing the number of students completing their programs are examined (Table 2), there is only one score than fails to be significant at the .01 level but, nevertheless, is significant at the accepted 5% level. The

control group from the private liberal arts college, Pacific Lutheran University, has by far the highest rate of completion of all of the control groups (non-co-ops), making the contrast between control and sample (co-op) groups much less pronounced.

Observations

The results of this study show a strong relationship in the between graduation and participation in cooperative education among the groups that were studied. The study also documents substantial gains in retention of co-op students over retention of students in traditional programs. The findings are particularly significant to Northwest students in view of the imfortmation presented in Workforce 2000" which states that "Obtaining 'good' jobs in the future will increasingly require education and skills training beyond high school. . . . minorities will represent a larger share of Oregon's population by the year 2000" (Oregon Work Force 2000, 1988, p 27).

While it is clear that cooperative education produces results that would be valuable to business and industry in the development of a qualified workforce, the reasons for this are not clear. One explanation might be that students in co-op do well because they self-select to be in the program and thus may be more motivated. Other possible explanations are that taking part in a co-op work experience motivates a previously unmotivated student. It is also possible that students tend to "burn out" at the junior year and co-op allows them a change from pure academic study and get them back 'on track'.

When looking at the statistics for Pacific Lutheran

University, the private liberal arts institution, it may be possible to state further about possible explanations for the success of cooperative education students. The retention and graduation rates for the total student body for Pacific Lutheran were higher than for any other college in the sample. The co-op students still surpassed the retention and graduation rates of the control group in excess of the .05 level of significance. All students who come to Pacific Lutheran have already 'self-selected' a private liberal arts college and probably have a higher motivation due to factors such as competition, financial commitment, parental pressure, etc. It would appear that self-selection has already taken place and thus the other explanations would seem to hold more credence. It can probably be reasonably assumed that students in co-op see what is lacking in their academic preparation in order to perform at the level needed to meet their long-term goals and, thus, are more motivated to continue their education to completion. These same students also are able to observe the work place while earning dollars that will, after a break from traditional learning, help to ease the road to completion of their academic programs.

In working with the minority sample, several interesting observations surfaced. The control group for the general population indicated an unusually large group of Asian students in technical fields. These students appeared to be on track towards a goal. When the minority sample was observed, it was noted that there was an even larger group in the co-op sample showing high degrees of success in fields such as optics. These were again Asian minorities. This group appears to very be

technically oriented and highly motivated.

When the entire minority population was studied further, it was observed that the percentage of minorities in co-op was about one third greater than the percentage of minorities in the general population. These minorities again did better than their non-co-op peers. It would be fair to speculate that minorities appear to have a different motivation or 'work ethic'. It could further be be stated that minorities in this study appear to see a value in practical learning and hands-on experience and that this learning and experience is a necessary ingredient to their academic success.

The positive effects of co-op experience on minorities must be considered. While programs are currently in place establishing cooperative education in minority institutions, it is increasingly necessary to document the outcomes to determine if this is a viable direction to take. Larger samples including greater varieties of minorities need to be examined over longer periods of time. It cannot be denied that traditionally high risk groups for academic failure (Bischoff, 1987) showed significantly higher graduation and retention rates as documented in the current study. With the necessity to integrate educated minorities into the work force, information that can help these educationally high risk groups to persist in attainment of education needs to be further documented.

Conclusions

This study suggests a strong relationship between both retention and graduation and cooperative education. While the

sample studied was sufficiently large enough to predict accurate results, it was confined to one region of the country and needs to studied and documented with other colleges in other regions. It is reccommended that further study utilizing an extensive regression analysis be undertaken to examine the effects of other factors that may have an impact on graduation and retention such as mandatory vs. optional programs, GPAs, rural vs. urbal environments, year in college, etc.

This study looks only at college students. If co-op does increase continued participation in college leading to successful degree completion, it would be advisable to undertake similar studies at the secondary level to see if results would be similar. With retention problems nationwide at all levels, programs that can document retention gains and positive steps towards probability of graduation, will be the programs standing a better chance for competition for limited dollars and for continued survival.

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Table 1
SUMMARY STATISTICS FOR RETENTION

Group	Mean Terms Attended	Variance	DF	Comp. T	Crit. T .05	Signif. .05
C.C.						
Control	5.112	12.16	877	10.55	1.96	*
Sample	7.643	13.12				
4-yr.						
Control	8.443	21.42	813	9.13	1.98	*
Sample	10.967	10.38				
Minority						
Control	6.064	12.713	112	4.87	1.98	*
Sample	9.313	11.70				

Table 2

Program Completion Tests (Chi Square)

Critical X^2	α = .05	3.04
	α = .01	6.63

Signif. .05 = * Signif. .01 = +

Group	X^2	t	df
EWU	64.03	4.79	225*+
OSU	33.89	3.65	215*
PLU	4.73	2.09	178*+
PSU	58.80	8.91	189*+
Combined 4-year	128.86	9.16	813*+
LCC	26.50	3.38	164*+
LBCC	30.20	7.73	248*+
SCCC	29.98	5.81	258*+
SCC	19.06	5.82	201*+
Combined CC	103.57	10.55	877*+

Figure 1

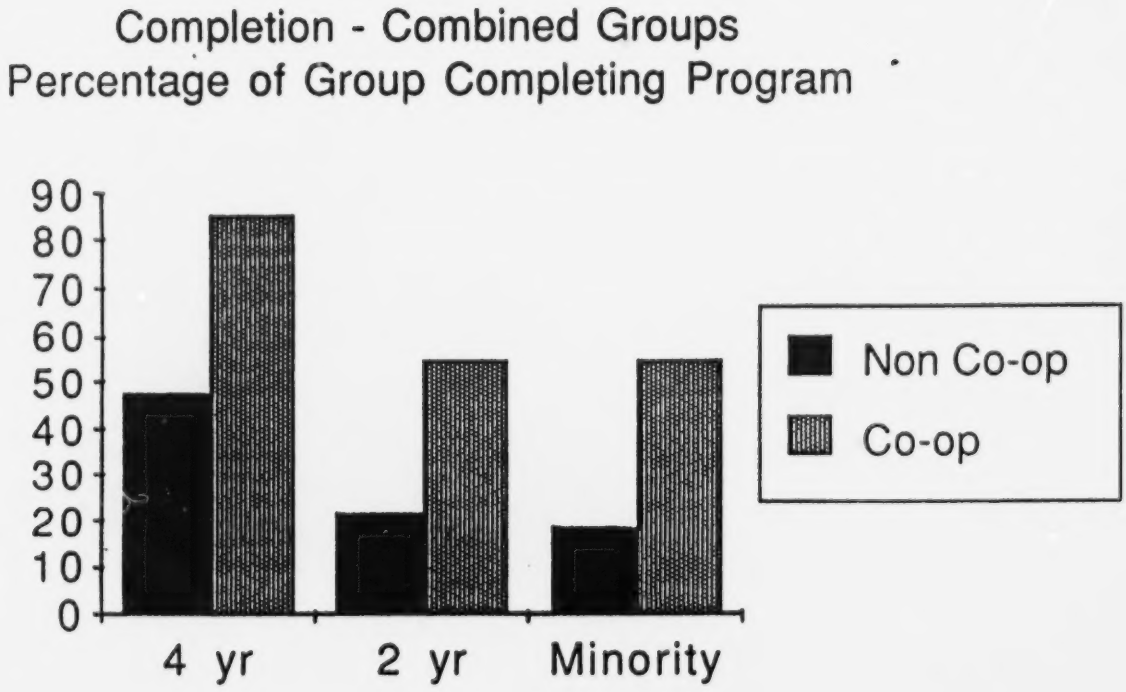

Completion - Combined Groups
Percentage of Group Completing Program
90
80
70
60
50
40
30
20
10
0
4 yr
2 yr
Minority
Non Co-op
Co-op

Figure 2

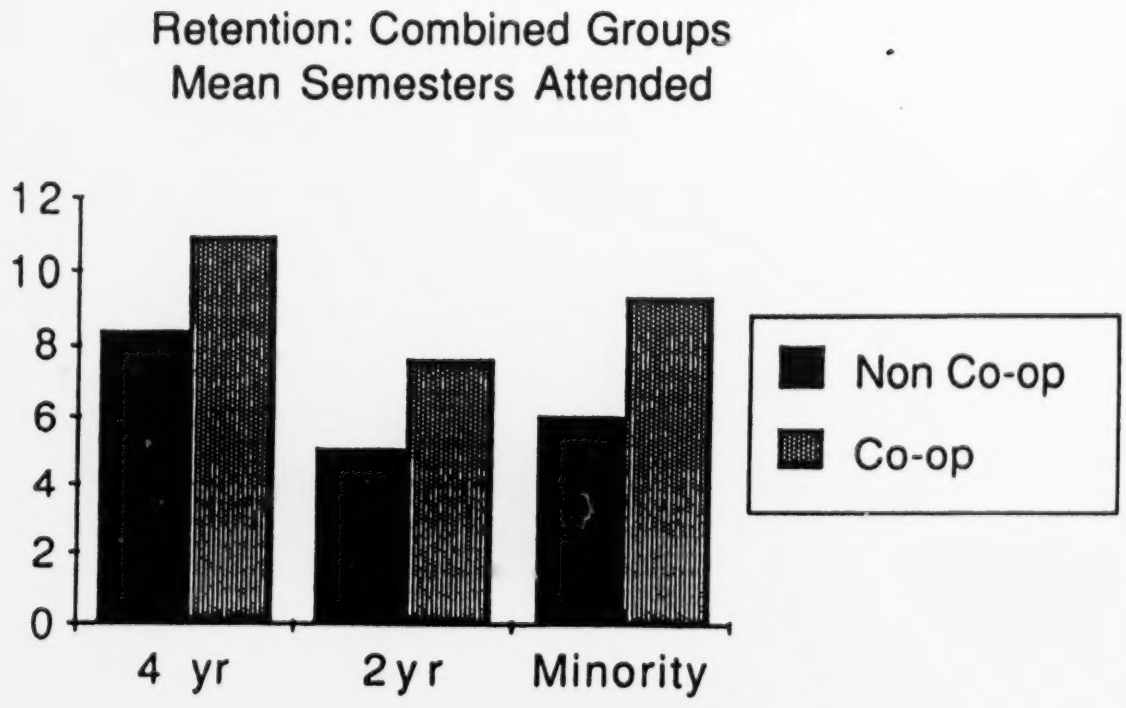
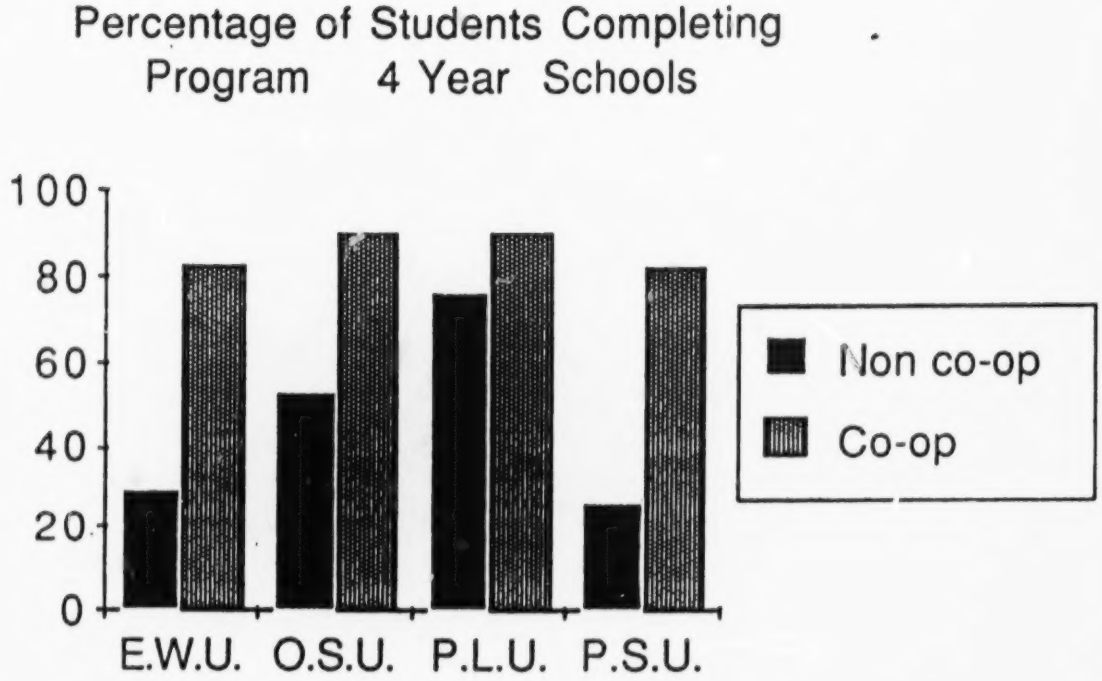

Retention: Combined Groups
Mean Semesters Attended
12
10
8
6
4
2
0
4 yr
2yr
Minority
Non Co-op
Co-op

Figure 3


Percentage of Students Completing Program 4 Year Schools
100
80
60
40
20
0
E.W.U.
O.S.U.
P.L.U.
P.S.U.
Non co-op
Co-op